

CLAIMS

I claim:

1. An apparatus for testing specimens comprising:

a outer container for holding a specimen;

a closure having means adapted to securely attach the closure to the container, said closure having a hollow shaft that projects into the inside of the container, the first end of the shaft attached to the closure and the second end of the shaft distally extending into the container, and the inner walls of the shaft defines an interior chamber, the shaft having at least one inlet proximate its distal end; and

a plug cover having at least one window, said plug cover seals off the inlets.) ^{NAB}

2. The apparatus of claim 1 further comprising an elongated tube that extends away from the closure and into the container, said tube having an isolator bottom attached to the distal end of the tube, the isolator bottom having at least one window for allowing at least a portion of any liquid specimen held in the container into the interior of the tube;

a test cassette having means adapted to securely attach the cassette to the closure but permitting rotational movement of the test cassette relative to the closure, the cassette

having a top section and a tubular pipe section that extends from the top section into the interior of the shaft for frictionally engaging the inner surface of the shaft, said cassette communicates with the interior bottom of the plug cover to move said plug cover a predetermined distance in the longitudinal direction such that said plug cover engages the isolator bottom as the cassette is inserted, the plug cover aligns the windows between the shaft and plug cover to expose the pipe section of the cassette to the liquid specimen and closes the windows between the tube and isolator bottom to define an inner container within said outer container for isolating said at least portion of the liquid specimen from any liquid specimen present in the outer container.

3. The apparatus fo claim 2 wherein rotation of the cassette aligns the inlets of the pipe section with the previously aligned inlets of both the shaft and plug cover allowing the liquid specimen to enter the interior of the cassette.

4. The apparatus of claim 3 further comprising a test strip secured to the interior of the pipe section wherein said test strip is capable of being exposed to the specimen when the specimen enters the interior of the cassette.

5. An apparatus for testing specimens comprising:

a container for holding a specimen;

a closure having means adapted to securely attach the closure to the container,

said closure having a hollow shaft that projects into the inside of the container, the first end of the shaft attached to the closure and the second end of the shaft distally extending into the container, and the inner walls of the shaft defines an interior chamber, the shaft having at least one inlet proximate its distal end; and

a test cassette having means adapted to securely attach the cassette to the closure but permitting rotational movement of the test cassette relative to the closure, the cassette having a top section and a tubular pipe section that extends from the top section into the interior of the shaft for frictionally engaging the inner surface of the shaft.

6. The apparatus of claim 5 further comprising a test strip positioned on the top section of said cassette and extending at least partially into the tubular pipe section, the pipe section having a valve opening that can be aligned with the inlet and for allowing the inlet to communicate with the tubular section of the pipe section and eventually to the top section thereby allowing a portion of the specimen to be directed to the test strip.

7. The apparatus of claim 5 wherein said means adapted to securely attach the closure to the container comprises mating threads that allow the closure to screw onto the container.

8. The apparatus of claim 5 further comprising a collar having a living edge

for aligning the test strip within the tubular pipe section and providing a controlled pressure to the multi-layered test strip.) NMB

9. The apparatus of claim 5 further comprising a plug cover having at least one window, said plug cover seals off the inlets) NMB in the absence of the cassette.

10. The apparatus of claim 9 further comprising a cassette) NMB having at least one inlet and designed such that when the cassette pushes on the interior landing area of the plug cover thus aligning the inlets of the shaft.) NMB

11. The apparatus of claim 10 further comprising gates on the cassettes wherein rotation of the cassette aligns the gates of the cassette with the inlets of the shaft thereby allowing at least a portion of the specimen into the interior of the cassette.

12. The apparatus of claim 11 further comprising a mesh applied over the windows of the plug cover and over the inlets of the closure to prevent unwanted particles from entering the cassette.) NMB

13. The apparatus of claim 12 further comprising a locking mechanism on the landing area designed to engage the cassette such that when the cassette is removed, it pulls the plug cover up thereby re-sealing the closures.

14. An apparatus for isolating a sample of a liquid specimen and testing said

sample without contaminating the remaining liquid specimen, the apparatus comprising:

an outer container having a first end that is open and a second end that is closed, the outer container being capable of holding a liquid specimen;

an isolator bottom positioned within the container proximate the second end of the container, the interior of the isolator bottom initially communicating with the interior of the container so that if a liquid specimen is present in the outer container, at least a portion of the liquid specimen would flow into the isolator bottom if a liquid specimen is present in the outer container; and

a closure having a top side and a bottom side, the bottom side facing the interior of the container, the closure having means to releasably attach to the first end of the container, the closure includes an elongated tube that extends away from the closure and into the container, (said tube having means to engage said isolator bottom, the tube ultimately forming a seal with the isolator bottom to define an inner container within the outer container for storing and isolating at least some of the liquid specimen from said at least a portion of the liquid specimen if present within said inner container.

15. The apparatus of claim 14 further comprising:

a shaft having a hollow interior and a distal end that is designed to extend inside said tube from the closure towards the second end of the container, the hollow

interior of the shaft communicates with the closure, thereby defining a pathway from a point within said inner container to the top side of the closure; and

an elongated shaft cover having a first end and a second end, said second end of the shaft cover being closed off, said shaft cover having an interior dimension slightly larger than the exterior dimension of the shaft so that the shaft cover functions as a sheath over said shaft and has an initial position that sealedly isolates the interior of the shaft from the interior of the tube.

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16. The apparatus of claim 15 further comprising an inlet means located on the shaft at least one egress means on the shaft cover, said egress means located proximate the inlet means of the shaft the shaft cover being designed to frictionally engage the shaft so that when a force is applied to the shaft cover, the shaft cover is designed to move in a predetermined manner with respect to the position of the shaft thereby aligning the shaft cover inlet with the shaft inlet means thereby permitting a sample of the liquid specimen within the inner container to enter the interior of the shaft.

17. The apparatus of claim 15 further comprising a test cassette having a top section that is designed to be secured to the top side of the closure, the test cassette having an elongated body section that is designed to extend at least partially into said shaft, the cassette having means for testing the sample of liquid specimen that comes

in contact with said body section.

18. The apparatus of claim 17 wherein said testing means is a chemically treated test-strip.

19. The apparatus of claim 18 wherein said elongated body section has a sufficiently long longitudinal dimension such that it engages the closed end of the shaft cover before the test cassette is secured to the closure so that when the test cassette is secured to the closure said elongated body section applies a longitudinal force to the shaft cover thereby moving said shaft cover in said pre-determined manner.

20. The apparatus of claim 19 further comprising a keyhole at the closed end of the shaft cover and a mating key at the distal end of the elongated body section so that when the cassette is secured to the closure a rotational force is applied to the shaft cover via the elongated body section thereby moving said shaft cover in a pre-determined manner.

21. The apparatus of claim 14 wherein said means to releasably attach the closure to the container comprises mating threads that allow the closure to screw onto the container.

22. The apparatus fo claim 14 wherein said tube has a circular cross-section.

23. The apparatus of claim 22 wherein said isolator bottom is frusto-conical in shape.

24. The apparatus of claim 14 wherein said tube has a rectangular cross-section.

25. The apparatus of claim 24 wherein said isolator bottom is rectangular in shape.

26. The apparatus of claim 14 wherein said tube has an oval cross-section.

27. An apparatus for isolating a sample of a liquid specimen and testing said sample without contaminating the remaining liquid specimen, the apparatus comprising:

an outer container having a first end that is open and a second end that is closed, the outer container being capable of holding a liquid specimen;

a closure having a top side and a bottom side, the bottom side facing the interior of the container, the closure having means to releasably attach to the first end of the container, the closure includes an elongated tube that extends away from the closure and into the container, said tube having an isolator bottom attached to the distal end of the tube, the isolator bottom having at least one window for allowing at least a portion of any liquid specimen stored in the outer container into the interior of the tube, the

closure communicates with the bottom of the outer container via said tube and isolator assembly to close said window in the isolator bottom, when said window is closed the tube and isolator bottom define an inner container within the outer container for isolating said at least portion of the liquid specimen from any liquid specimen present in the outer container.

28. The apparatus fo claim 27 further comprising a shaft having a hollow interior and a distal end that is designed to extend inside said tube from the closure towards said second end of the outer container, the distal end attached to an isolator bottom that partially seals off said distal end, the isolator bottom having at least one window that defines a passage from the exterior of the shaft to the hollow interior of the shaft, the hollow interior of the shaft communicates with the closure, thereby relating a pathway from a point within said inner container to the top side of the closure;

an elongated shaft cover having a first end and a second end, said second end of the shaft cover being closed off, said shaft cover having an interior dimension slightly larger than the exterior dimension of the shaft so that the shaft cover functions as a sheath over said shaft and has an initial position that sealedly isolates the interior of the shaft from the interior of the tube.

wherein said elongated body section has a sufficiently long longitudinal dimension such that it engages the closed end of the shaft cover before the test

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cassette is secured to the closure so that when the test cassette is secured to the closure said elongated body section applies a longitudinal force to the shaft cover thereby moving said shaft cover in said pre-determined manner.

29. The apparatus fo claim 27 wherein said tube has a circular cross-section.

30. The apparatus of claim 29 wherein said isolator bottom is frusto-conical in shape.

31. The apparatus of claim 27 wherein said tube has a rectangular cross-section.

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